

## WHAT IS CLAIMED IS:

1           1. For use in communications system coupled to a  
2 packet network lacking packet aggregation and fragmentation  
3 at intermediate nodes therein, a packet relay for improving  
4 bandwidth utilization comprising:

5                 a connection to a wireless link;

6                 a connection to the packet network; and

7                 a packet relay controller intercepting traffic  
8 between the wireless link and the packet network and re-  
9 formatting the intercepted traffic to employ a first  
10 maximum transmission unit size for intercepted traffic  
11 forwarded to the packet network and a second maximum  
12 transmission unit size for intercepted traffic forwarded to  
13 the wireless link.

1           2. The packet relay as set forth in Claim 1 wherein  
2 the first maximum transmission unit size is larger than the  
3 second maximum transmission unit size.

1           3.    The packet relay as set forth in Claim 1 wherein  
2    the first maximum transmission unit size is an optimal path  
3    maximum transmission unit size for packet communications  
4    between the packet relay controller and a final destination  
5    within the packet network.

1           4.    The packet relay as set forth in Claim 1 wherein  
2    the second maximum transmission unit size is suitable for  
3    wireless communications.

1           5.    The packet relay as set forth in Claim 1 wherein  
2    the packet relay controller aggregates packets within  
3    intercepted traffic from the wireless link for forwarding  
4    to the packet network.

1           6.    The packet relay as set forth in Claim 1 wherein  
2    the packet relay controller fragments packets within  
3    intercepted traffic from the packet network for forwarding  
4    to the wireless link.

1           7. The packet relay as set forth in Claim 1 wherein  
2 the packet relay controller is an Internet protocol level  
3 proxy within an interface between a wireless communications  
4 system and an internal packet network for an enterprise  
5 operating the wireless communications system.

1           8.    A communications system comprising:

2               a wireless communications device employing a  
3 wireless link;

4               a packet network lacking packet aggregation and  
5 fragmentation at intermediate nodes therein; and

6               a packet relay for improving bandwidth  
7 utilization in communications between the wireless  
8 communications device and a final destination within the  
9 packet network comprising:

10                   a connection to the wireless link;

11                   a connection to the packet network; and

12                   a packet relay controller intercepting  
13 traffic between the wireless link and the packet  
14 network and re-formatting the intercepted traffic to  
15 employ a first maximum transmission unit size for  
16 intercepted traffic forwarded to the packet network  
17 and a second maximum transmission unit size for  
18 intercepted traffic forwarded to the wireless link.

1           9.    The communications system as set forth in Claim 8  
2 wherein the second maximum transmission unit size is  
3 smaller than the first maximum transmission unit size.

1           10. The communications system as set forth in Claim 8  
2 wherein the first maximum transmission unit size is an  
3 optimal path maximum transmission unit size for packet  
4 communications between the packet relay controller and a  
5 final destination within the packet network.

1           11. The communications system as set forth in Claim 8  
2 wherein the second maximum transmission unit size is  
3 suitable for wireless communications.

1           12. The communications system as set forth in Claim 8  
2 wherein the packet relay controller aggregates packets  
3 within intercepted traffic from the wireless link for  
4 forwarding to the packet network.

1           13. The communications system as set forth in Claim 8  
2 wherein the packet relay controller fragments packets  
3 within intercepted traffic from the packet network for  
4 forwarding to the wireless link.

1           14. The communications system as set forth in Claim 8  
2 wherein the packet relay controller is an Internet protocol  
3 level proxy within an interface between a wireless  
4 communications system and an internal packet network for an  
5 enterprise operating the wireless communications system.

1           15. For use in communications system coupled to a  
2 packet network lacking packet aggregation and fragmentation  
3 at intermediate nodes therein, a method of improving  
4 bandwidth utilization comprising:

5           intercepting traffic from a wireless link to the  
6 packet network;

7           re-formatting the intercepted traffic to employ a  
8 first maximum transmission unit size different than a  
9 second maximum transmission unit size of the intercepted  
10 traffic; and

11          forwarding the re-formatted traffic to the packet  
12 network.

1           16. The method as set forth in Claim 15 wherein the  
2 step of re-formatting the intercepted traffic to employ a  
3 first maximum transmission unit size different than a  
4 second maximum transmission unit size of the intercepted  
5 traffic further comprises:

6           re-formatting the intercepted traffic to employ a  
7 maximum transmission unit size which is larger than the  
8 second maximum transmission unit size.

1           17. The method as set forth in Claim 15 wherein the  
2           step of re-formatting the intercepted traffic to employ a  
3           first maximum transmission unit size different than a  
4           second maximum transmission unit size of the intercepted  
5           traffic further comprises:

6                     re-formatting the intercepted traffic to employ  
7           an optimal path maximum transmission unit size for packet  
8           communications between an interception point and a final  
9           destination within the packet network.

1           18. The method as set forth in Claim 15 wherein the  
2           step of re-formatting the intercepted traffic to employ a  
3           first maximum transmission unit size different than a  
4           second maximum transmission unit size of the intercepted  
5           traffic further comprises:

6                     re-formatting the intercepted traffic from a  
7           maximum transmission unit size suitable for wireless  
8           communications.



1           19. The method as set forth in Claim 15 wherein the  
2           step of re-formatting the intercepted traffic to employ a  
3           first maximum transmission unit size different than a  
4           second maximum transmission unit size of the intercepted  
5           traffic further comprises:

6                 aggregating packets within intercepted traffic  
7           from the wireless link for forwarding to the packet  
8           network.

1           20. The method as set forth in Claim 15 further  
2           comprising:

3                 intercepting traffic from the packet network to  
4           the wireless link;

5                 re-formatting the intercepted traffic from the  
6           packet network to the wireless link to employ the second  
7           maximum transmission unit size; and

8                 forwarding the intercepted traffic re-formatted to  
9           employ the second maximum transmission unit size to the  
10          wireless link.